

Section 8.3 - Finding x and y intercepts

To find the x-intercept, make the y value 0. (numerator = 0)

To find the y-intercept, make the x value 0.

examples: $\frac{3(0)-15}{0+5} = \frac{-15}{5} = -3$ $\frac{2(0)+18}{(-2)(3)} = \frac{18}{-6} = -3$ $= \frac{9}{12}$

1) $y = \frac{3x-15}{x+5}$

$(x+5)0 = \frac{3x-15}{x+5} \cdot x+5$

$0 = 3x - 15$
 $15 = 3x$ $x = 5$

x-int: (5, 0)

y-int: (0, -3)

2) $y = \frac{2x+18}{(x-2)(x+3)}$

$2x+18 = 0$
 $2x = -18$
 $x = -9$

num=0 x-int: (-9, 0)

y-int: (0, -3)

3) $y = \frac{2x^2+9x+9}{x^2-7x+12}$ 18

$0 = 2x^2+9x+9$
 $(2x^2+6x)(3x+9)$
 $2x(x+3)+3(x+3)$
 $(2x+3)(x+3)$

x-int: (-3, 0) (-3, 0)

y-int: (0, 3)
 $2x+3=0$ $x+3=0$

Putting it all together:

Find the x-intercept, y-intercept, vertical and horizontal Asymptotes for each function:

4) $\frac{x+4}{(x-2)(x-4)}$ $\frac{x}{x^2}$
 $x+4=0$ $\frac{0+4}{(-2)(-4)} = \frac{4}{8}$
 $x=-4$

$x-2=0$ $x-4=0$
 $x=2$ $x=4$

num=0 $(-4,0)$
x-int: $(-4,0)$
 $x=0$
y-int: $(0, \frac{1}{2})$
den=0 $x=2, 4$
rules
HA: $y=0$

5) $\frac{2}{x-1}$ bottom $\frac{2}{-1}$
 $2=0$ False

$x-1=0$
 $x=1$

x-int: none
y-int: $(0, -2)$
VA: $x=1$
HA: $y=0$

6) $\frac{x^2-9}{3x-12}$ $\frac{x^2-9}{-12} = \frac{9}{12}$

$x^2-9=0$
 $(x+3)(x-3)$
 $x=-3$ $x=3$

$3x-12=0$ $x=4$
 $3x=12$

x-int: $(-3,0)$ $(3,0)$
y-int: $(0, \frac{3}{4})$
VA: $x=4$
HA: ~~9~~ none

Homework: 4/15
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